



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 878 180 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:  
18.11.1998 Bulletin 1998/47

(51) Int. Cl.<sup>6</sup>: A61F 13/15

(21) Application number: 97116254.0

(22) Date of filing: 18.09.1997

(84) Designated Contracting States:  
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE

(30) Priority: 13.05.1997 JP 137730/97

(71) Applicant: Crecia Corporation  
Shinjuku-ku, Tokyo 163-11 (JP)

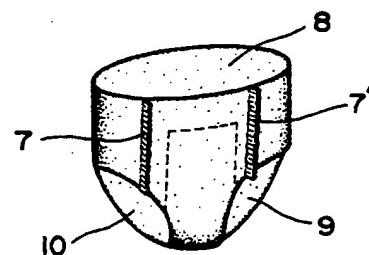
(72) Inventors:  
• Saito, Katsuhiko,  
c/o Crecia Corporation  
Shinjuku-ku, Tokyo 163-11 (JP)  
• Matsubara, Hiroaki,  
c/o Crecia Corporation  
Shinjuku-ku, Tokyo 163-11 (JP)

(74) Representative:  
VOSSIUS & PARTNER  
Siebertstrasse 4  
81675 München (DE)

(54) Disposable pull-on type diaper with seal lines in front

(57) Disclosed is a disposable pull-on type diaper with seal lines in front, characterized in that, to the disposable pull-on type diaper with the abdominal side sheet region and the back side sheet region continuing through the crotch side sheet region and both opposed side edge lines of abdominal side sheet region and back side sheet region adhered each other to form a trunk portion aperture along the upper end line and thigh portion apertures along the right and left lower end lines, respectively, the abdominal side sheet region and the back side sheet region are constituted with the same materials in the same constitution, and the seal line zones to be inevitably formed by adhering those opposed side edge zones each other are provided on the abdominal side and inside the right and left iliac crests. The objective is to improved the disposable pull-on type diaper with seal lines that give uncomfortable feeling by stimulating the skin of waist portion particularly when lying on the sides to sleep.

F I G . 2



EP 0 878 180 A2

**Description**

The present invention relates to a disposable pull-on type diaper, in particular, one having seal line zones in front, that is, on the abdominal side.

The disposable pull-on type diaper has a constitution, in which the outer surface is covered with a liquid-impermeable sheet and the inner surface is covered with a liquid-permeable sheet, with an absorbent interposed therebetween. And, in the shape, as shown in Fig. 3, it has a trunk portion aperture (8) along the upper end line and thigh portion apertures (9), (10) for both legs along the right and left lower end lines in similar to the shape of usual underwear briefs. Further, it has the absorbent (1) located in the crotch side sheet region (4) and the seal lines (7), (7) along the both end lines of waist portion which are formed inevitably in course of the manufacturing said diaper.

These seal line zones are linear ones being in an adhered overlapping state, resulting at the time of mutually adhering the one side edge zone (5) of the abdominal side sheet region (2) which becomes front side on wearing and the same one side edge zone (6) of the back side sheet region (3) which becomes back side on wearing, and the another side edge zone (5') of the abdominal side sheet region (2) and the same another side edge zone (6') of the back side sheet region (3) respectively by heat sealing etc., in case developed diaper materials of which central region of the longitudinal direction being pinched in and the respective front and behind shapes of longitudinal direction being laterally in approximate symmetry is converted to the disposable pull-on type diaper, as shown in Fig. 4, wherein the liquid-permeable sheet and the liquid-impermeable sheet being constituting materials are in a state of being hardened with heat, adhesive, etc.

Such disposable pull-on type diaper is worn not only by babies, but also by adults who become bed-ridden due to an accident, disease, etc. and aged persons whose health is declining, and the like. However, since particularly adults, aged persons, etc. confined to bed for a long time are in a state of being unable to toss about in bed by their own power, the direction of their body is being occasionally changed by their carers. Namely, they are repeating to turn over on their back and to turn right and left sideways, but, when they are left to be sideways for a long time, in particular, then the side seal of said diaper is pressed against their skin, causing discomfort for wearers of said disposable pull-on type diaper, and further there has been an anxiety to result in a cause of generating bed sores.

Moreover, when taking off the disposable pull-on type diaper from wearers, there are a case of bringing it down toward their toes as it is and another case that their carers rupture it along seal lines by hands to develop in plane shape and remove. And, the excreta of wearers in the state of being bed-ridden sometimes reaches the seal lines, hence the rupture along seal

lines by carers could not be said to be sanitary.

The invention improves such defects of conventional disposable pull-on type diaper and provides a constitution not to give uncomfortable feeling to wearers.

The disposable pull-on type diaper of the invention is one that the abdominal side sheet region and the back side sheet region continue through the crotch side sheet region, and the respective opposed side edge lines of both abdominal side sheet region and back side sheet region are adhered each other to form a trunk portion aperture along the upper end line and thigh portion apertures along the right and left end lines, and is characterized by that the abdominal side sheet region and the back side sheet region are constituted with the same material in the same constitution, and the seal line zones formed by adhering each other those opposed side edge lines are provided on the abdominal side region inside the right and left iliac crests. At this time, the seal line zones are preferably provided on the abdominal side region and within 10 cm towards its both sides from the longitudinal center line of said diaper, respectively.

**25 BRIEF DESCRIPTION OF THE DRAWING**

Fig. 1 is a developed plan showing an example of the invention.

Fig. 2 is an assembling oblique view of the same.

Fig. 3 is an assembling oblique view of a conventional example.

Fig. 4 is a developed plan of the same.

Fig. 5 is an outside view of the example of the invention.

Fig. 6 is A arrow direction view of Fig. 5, showing a condition of "on wearing".

Fig. 7 is B arrow direction view of Fig. 5, showing a condition of "on wearing".

Fig. 8 is one corresponding to Fig. 7, showing the conventional example.

**DETAILED DESCRIPTION OF THE INVENTION**

In this way, by providing the seal line zones inside the right and left iliac crests of human body, that is, inside the bone crests which stick out at the right and left of the abdominal side in the waist position of human body, in case a person, even a bed-ridden person, may have the direction of his body placed sideways for a long time, the hard seal line zones are not pressed against his body, thus allowing him to spend comfortably.

And, when the seal line zones come on the abdominal side as in the invention, then the area of back side sheet region becomes wider, resulting in a structure to largely wrap the hip portion of wearers therein, and the excreta reaching the seal line zones become less even in the state of being bed-ridden, which is sanitary for the carers. Further, when removing the diaper, after the dia-

per is ruptured along the seal line zones and developed, the excreta is wrapped up easily and can be disposed promptly because of wider back side sheet region, thus making it possible to prevent smell of the excreta diffusing around and dispose more sanitarily.

Moreover, when rupturing the diaper on wearing along the seal line zones, said seal line zones appear usually on the upper side in case of the inventive diaper, hence it is easy to handle it for the wearer and carers, leading to good handling.

Furthermore, according to the inventive diaper, distinction of the front and behind sides is possible at a glance from external appearance, thus mistake in front or behind side on wearing becoming less.

Besides, for the disposable pull-on type diaper for adults and aged persons, it is preferable to provide these seal line zones within 10 cm, more preferably within 8 cm on the both sides from the longitudinal center line of the abdominal region of said diaper, respectively.

#### Example

As shown in Fig. 1, an approximately rectangular absorbent (1) was interposed between a liquid-impermeable sheet of the outer surface and a liquid-permeable sheet of the inner surface to be fixed therewith, and a abdominal side sheet region (2) being one end portion in the longitudinal direction and a back side sheet region (3) being another end portion in the longitudinal directions, wherein said back side sheet region (3) is laterally longer than said abdominal side sheet region (2), were continued through a crotch side sheet region (4) of which both lateral sides are curved in oppositely towards the insides, thereby making a developed diaper material in a shape of almost a sandglass. The longitudinal length of zone (5), (5') is the same as that of zone (6), (6'). At this time, the lateral dimension (L) of the abdominal side sheet region (2) was made to be about 16 cm.

And, said diaper material was bent in the crotch side sheet region (4) so that the surface of liquid-permeable sheet became inside, and the both side edge zones (5), (5') of the abdominal side sheet region (2) and the respective opposed side edge zones (6), (6') of the back side sheet region (3) were adhered by means of heat fusion to provide the seal lines (7), (7') on the abdominal side, (that is, zones (5) and (6) were overlapped and adhered each other to afford seal line (7) and zones (5') and (6') were likewise overlapped and adhere each other to afford seal line (7')) as shown in Fig. 2, thereby making up a disposable pull-on type diaper with the trunk portion aperture (8) formed along the upper end line and the thigh portion apertures (9), (10) formed along the right and left lower end lines.

Since such a disposable pull-on type diaper has a distance (L) between seal line zones (7), (7') being about 16 cm, the seal line zones come inside the hard

iliac crests located at the right end and left end of the abdominal side of adult on wearing, thus do not giving any uncomfortable feeling to its wearers.

As illustrated in Fig. 6 and Fig. 7 showing the diaper of the present invention, excreta (e) excreted by the wearers lying down on bed inside the worn diapers are in tendency to move along the downside, i.e. in the direction of arrow (E), but the excreta (e) would neither reach nor contact the seal lines (7), (7') because the seal lines are located up sides of the diaper and enough apart from the line of arrow (E).

On the contrary, in Fig. 8 showing the conventional diaper, the seal lines (7), (7') are located on the extension lines of arrows (E) (E) and hence the excreta (e) would readily reach and contact the seal lines (7), (7').

As described above, in accordance with the invention, since the seal lines to be formed inevitably in course of making disposable pull-on type diaper are present on the abdominal side, these hard seal lines are never pressed against the skin for wearer who cannot toss about by himself, even if his body might be placed in any direction, thus decreasing the causes of bedsores, decubitus, etc. and allowing him to spend comfortably. Moreover, also when taking off the diaper by rupturing by hands along the seal lines, the excreta reaching said seal lines become less, because of wider back side sheet region, and yet it is possible to wrap the excreta therein promptly, thus leading to sanitary disposal. Furthermore, wearing mistake in front or behind becomes less at the time of wearing the diaper and, also when rupturing diaper, the seal line zones always come on the upper surface and hence the handling the diaper becomes easy. The invention exerts such effects and others.

#### Claims

1. A disposable pull-on type diaper having seal line zones in front wherein the abdominal side sheet region and the back side sheet region continue through the crotch side sheet region, and respective opposed side edge zones of the both abdominal side sheet region and back side sheet region are overlapped and adhered each other to form a trunk portion aperture along the upper end line and thigh portion apertures along the right and left lower end lines, respectively, of said disposable pull-on type diaper, characterized by that the abdominal side sheet region and the back side sheet region are formed respectively in the same constitution with the same materials, and the seal line zones to be formed by overlapping and adhering those respective opposed side edge zones each other are provided inside the position corresponding to the right and left iliac crests of the wearer of said diaper on the abdominal side thereof.
2. The disposable pull-on type diaper of Claim 1,

wherein the seal line zones are provided within 10 cm from the longitudinal center line of the abdominal side of diaper toward the both sides thereof, respectively.

5

3. The disposable pull-on type diaper of Claim 1 or 2, wherein the outer surface of the diaper is covered with a liquid-impermeable sheet and the inner surface of the diaper is covered with a liquid-permeable sheet, with an absorbent interposed therebetween. 10
4. The disposable pull-on type diaper of Claim 3, wherein the respective opposed side edge zones of the liquid-permeable sheet and the liquid-impermeable sheet consisting materials of the diaper are overlapped and adhered with the applied adhesive each other under application of heating and pressing. 15
5. The disposable pull-on type diaper of Claim 1, wherein the diaper is made of a sheet material having a developed shape consisting of a broad rectangular region, a narrow rectangular region and an intermediate pinched-in region to form a nearly sandglass-shape as a whole, and both the opposed side edge zones of the abdominal side sheet region of the narrow rectangular region and the back side sheet region of the broad rectangular region are overlapped and adhered each other respectively to afford a disposable pull-on type diaper having seal line zones located on the abdominal side thereof. 20
6. A manufacturing process of disposable pull-on type diaper comprising a step of preparing a sheet material for diaper having a developed shape consisting of a broad rectangular region, a narrow rectangular region and an intermediate pinched-in region to form a nearly sandglass-shape as a whole, wherein the sheet material consists of a liquid-impermeable sheet covering the outer surface of the diaper, a liquid-permeable sheet covering the inner surface of the diaper and an absorbent interposed therebetween, and a step of overlapping and adhering both the opposed side edge zones of the abdominal side sheet region and the back side sheet region to afford a disposable pull-on type diaper having a seal line zones located on the abdominal side thereof, characterized by that the abdominal side sheet region and the back side sheet region are formed respectively in the same constitution with the same materials, and the seal line zones to be formed by overlapping and adhering those respective opposed side edge zones each other are provided inside the position corresponding to the right and left iliac crests of the wearer of said diaper on the abdominal side thereof. 25
- 30
- 35
- 40
- 45
- 50
- 55

FIG. 1

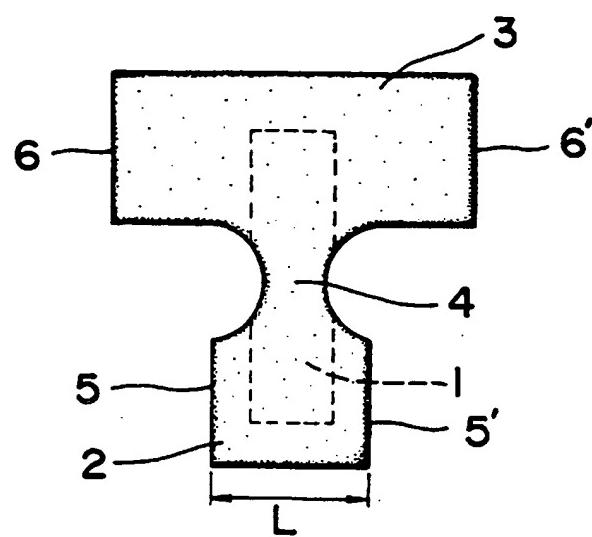


FIG. 2

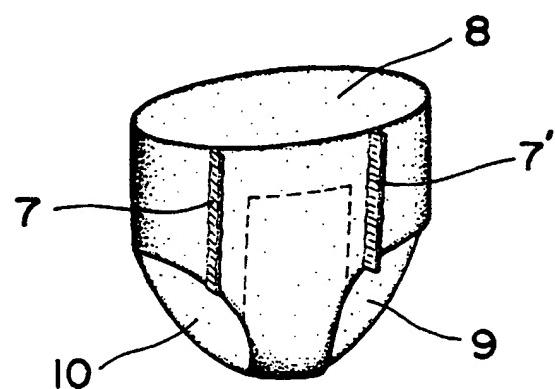


FIG. 3

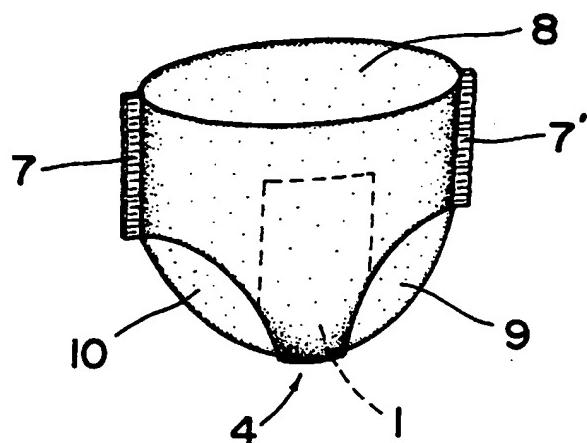


FIG. 4

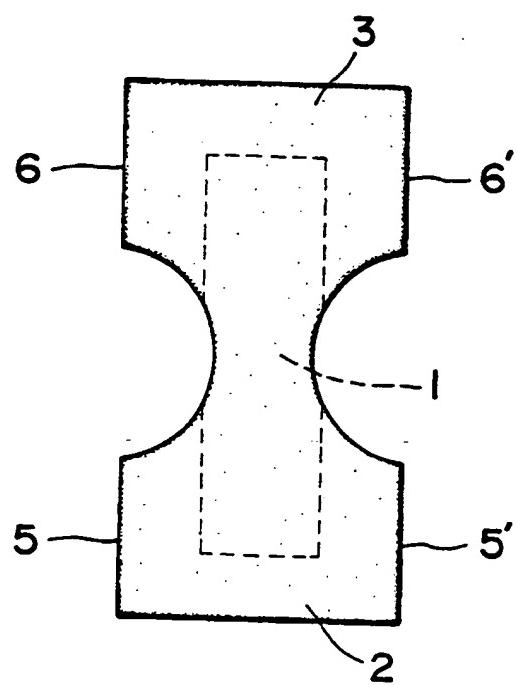


FIG. 5

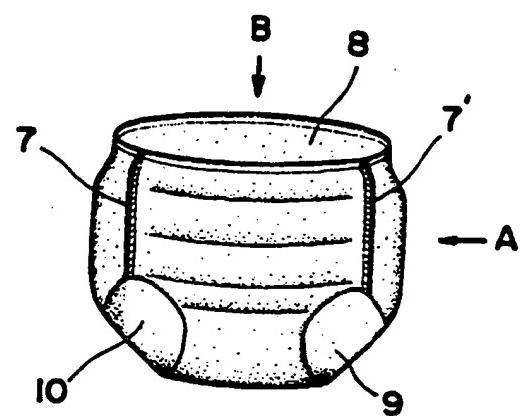


FIG. 6

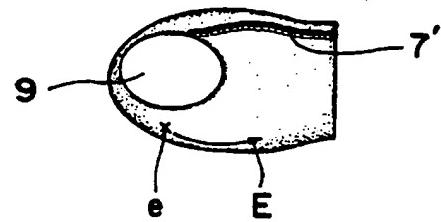


FIG. 7

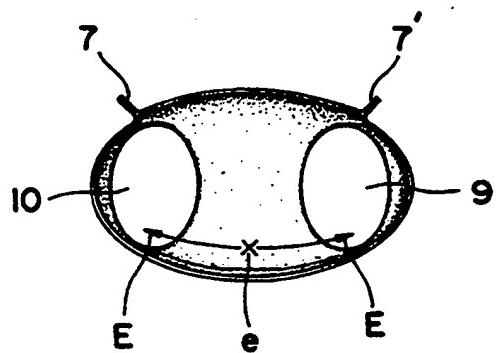


FIG. 8

